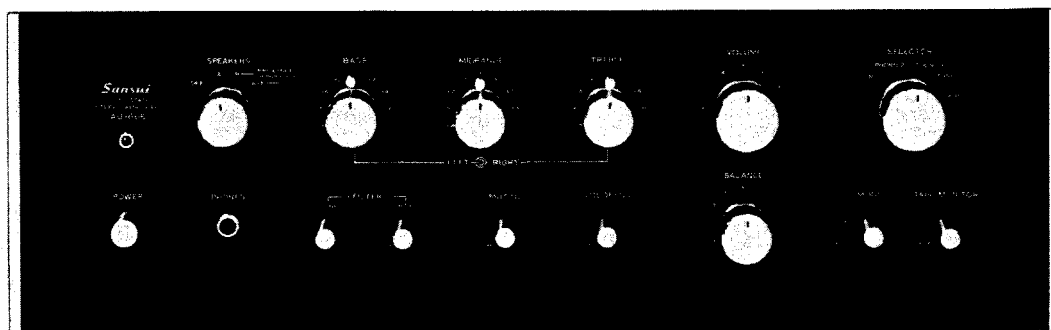


# OPERATING INSTRUCTIONS & SERVICE MANUAL

SOLID-STATE STEREO AMPLIFIER

## SANSUI AU-666



SANSUI ELECTRIC COMPANY LIMITED

Tank you for selecting the Sansui AU-666 Solid Stereo Amplifier, an excellent choice that will become more apparent after years of rich stereo listening.

Sansui is known throughout the world for the unsurpassed quality of its audio equipment line, be it a control amplifier, a stereo receiver, a speaker system, a turntable, a tape deck or a stereo headset, and takes the greatest efforts to merit and maintain this reputation.

The AU-666 is no exception. It features the refined dull black panels common to all AU series professional control amplifiers from Sansui, the direct-coupled complementary circuits in the power amplifier section and the exclusive Triple Tone Controls in the preamplifier section. Special provisions have also been made to permit the amplifier to be built up into an electronic crossover system and permit comparing such a system with a standard stereo set up. This manual has been prepared to aid you in keeping the AU-666 working perfectly. Please read the contents of this manual carefully before installing or operating the amplifier. You will then be able to enjoy the world's highest standards of sound reproduction to the fullest.

## CONTENTS

---

### OPERATING INSTRUCTIONS

SWITCHES AND CONTROLS .....	3, 4
OPERATIONS .....	5, 6
—CONNECTING LOUDSPEAKERS	
—RECORD PLAYING	
—MICROPHONES	
OPERATIONS .....	7, 8
—TUNER	
—TAPE DECKS	
ELECTRONIC CROSSOVER SYSTEM .....	9, 10
MAINTENANCE .....	11, 12, 13
SPECIFICATIONS/ACCESSORIES .....	14
CHARACTERISTICS .....	15, 16

### SERVICE MANUAL

TROUBLESHOOTING CHART .....	17, 18
DISASSEMBLY PROCEDURE .....	19
BLOCK DIAGRAM .....	20
TEST POINTS .....	21
ALIGNMENT .....	22
PRINTED CIRCUIT BOARDS AND PARTS LIST .....	23, 24, 25, 26, 27, 28
OTHER PARTS AND THEIR POSITION ON CHASSIS ..	29, 30

# SWITCHES AND CONTROLS

## Bass Control

This control is used to boost or cut low-end frequency response according to taste and listening conditions. To boost, turn it clockwise. To cut, turn counterclockwise.

Designed as a friction-coupled, dualconcentric control, it is actually two controls in one. The outer ring controls bass loudness in the right channel; the inner knob controls bass loudness in the left channel. Both outer and inner controls can be used simultaneously or independently, as desired.

## Treble Control

Use this control in the same manner as the Bass control to boost or cut high-end response.

## Midrange Control

Use this control in the same manner as the Bass control to boost or cut midrange response.

## Power Indicator

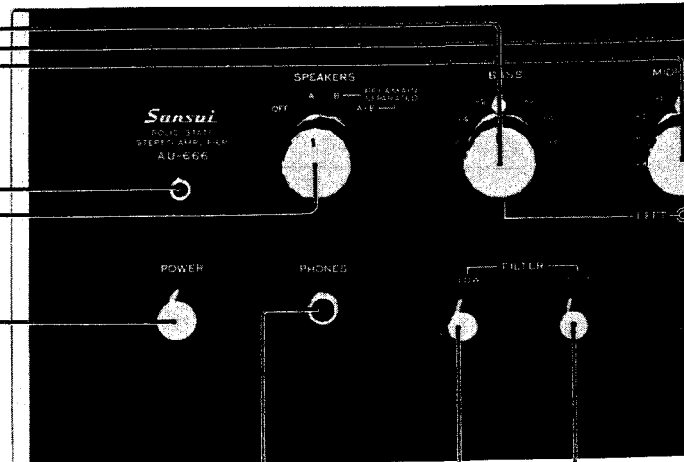
The POWER indicator is lit when the POWER switch is turned ON. It remains lit while the unit is on.

## Speakers Switch

This switch is used to choose between one set of speakers A and another set B, which may be installed in the same room or remotely in another part of your home. It also has a position for running all speakers at once (A+B), and another that cuts them all out for private listening with headphones (OFF).

## Power Switch

To turn on the amplifier, push the POWER Switch once. To turn it off, push the switch again. The power to the two outlets marked SWITCHED on the rear panel are controlled by the POWER Switch.



## Headphones Jack

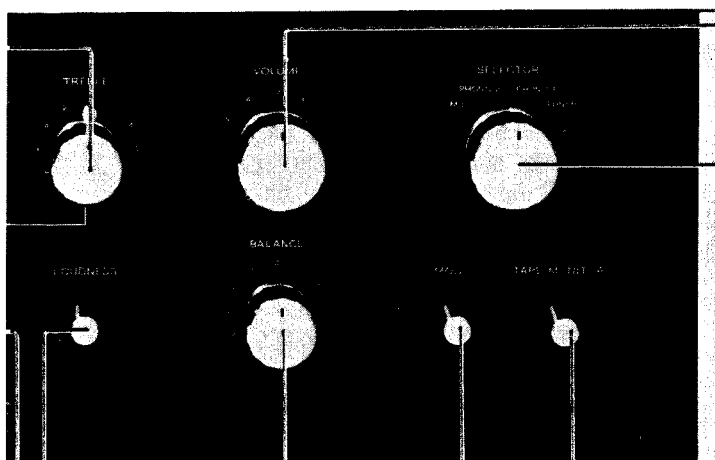
Plug in a headset for private listening or monitoring. The PHONES jack will accept any standard stereo phono plug but a dynamic headset is recommended.

## Low Filter

Turntable rumble and other low-frequency noise are reduced by setting the LOW FILTER switch to the ON position.

## High Filter

Surface noise from old or worn records, tape hiss and other high-frequency noises are reduced by setting the HIGH FILTER switch to the ON position.



## Volume Control

This control adjusts the over-all sound level of both channels. Turn it clockwise, and the volume is increased; turn it counterclockwise, and the volume is decreased.

## Input Selector Switch

This switch selects from among the various program sources connected to the input jacks on the rear panel of the amplifier.

1. MIC—Selects a microphone connected to the MIC inputs.
2. PHONO 1 —Selects a record player connected to the PHONO 1 inputs on the rear panel.
3. PHONO 2 —Selects a record player connected to the PHONO 2 inputs.
4. TUNER—Selects a tuner, FM-MPX adaptor or other sources connected to the TUNER inputs.
5. AUX—Selects a tuner, FM-MPX adaptor or other sources connected to the AUX inputs.

## Balance Control

This controls adjusts for equal sound from both left and right channels to compensate for slight imperfections in program material, variations in speaker output, and the vagaries of room acoustics.

## Loudness Control

Whenever the volume is decreased to a low listening level, the music will seem to lose much of its bass and some of its treble. This effect is due to the sensitivity of human hearing. When the LOUDNESS switch is on, it provides the correct amount of bass and treble boost required to compensate for this change.

## Muting Switch

The MUTING switch attenuates music by 20dB over the whole frequency range. It is used to eliminate interstation tuning noise, to suppress the background noise heard when changing a record, and to reduce the over-all sound level temporarily while playing a record and other program sources.

## Tape Monitor Switch

This switch enables you to compare a recorded tape with the original program. When this switch is in the PLAYBACK position, the recorded tape is heard from the speakers. Monitoring is only possible with a 3-head tape deck.

**Note:** When you playback through the amplifier, the TAPE MONITOR switch should be in the PLAYBACK position as well. When not in use, make sure the switch is in the SOURCE position.

## Mode Switch

**STEREO**—Use this position for all stereophonic programs.

**MONO**—Use this position for all monophonic programs. The Mode switch in the MONO position connects either right or left, or both right and left programs to both speakers.



## Connecting Loudspeakers

Any speakers of 4- to 16-ohm impedance can be used with this amplifier. If you wish to connect a remote stereo speaker system in addition to the main set of speakers in your listening room, you can connect the set to the SYSTEM-B terminals on the rear panel of the amplifier. The speaker selector switch on the front panel of the amplifier enables you to choose between A and B speaker systems. It also has a position for running all speakers at once, and another that cuts them all out for private listening with headphones.

**Note:** Instructions for connection of additional components in an electronic crossover system will be found in the section entitled 'ELECTRONIC CROSSOVER SYSTEM'.

## One Speaker System

To connect the main set of speakers to the amplifier:

1. Connect the positive terminal of the speaker on your right (as viewed from the listening area) to the right channel SYSTEM-A + terminal on the rear of the amplifier.
2. Connect the lead from the negative speaker terminal (marked —) to the right channel SYSTEM-A — terminal on the rear of the amplifier.
3. The left speaker connections are made at the left channel SYSTEM-A terminals on the rear of the amplifier in the manner described above.
4. Set the SPEAKERS selector to SYSTEM-A.

In connecting speakers to the amplifier, no more than  $\frac{1}{4}$ -inch of insulation should be removed from the end of a speaker cable, since any greater length of exposed wire is likely to cause shorts at the terminals. All wire strands should be tightly twisted. To connect, depress the terminal button with one hand, push the stripped end of lead wire in the hole with the other hand, and release the button.

## Two Speaker Systems

If you wish to connect another set of speakers in the same room or remotely, you can connect such speakers to the SYSTEM-B terminals of each channel as indicated in the preceding section. When the SPEAKERS selector is in the SYSTEM B position, you will hear sound from the speakers con-

nected to the SYSTEM B terminals. With the selector in the A + B position, the sound comes from all the speakers connected to the amplifier.

**Caution:** The amplifier may be damaged if the two stereo pairs of 4-ohm speaker systems are connected to the A and B terminals and the SPEAKERS selector is turned to the A+B position. For use with two sets of speaker systems, the impedance of each speaker system must be more than 8 ohms.

## RECORD PLAYERS

### Connecting Record Players

The AU-666 has two sets of PHONO inputs to accommodate a pair of players or pickup arms.

To connect a record player to the amplifier, proceed as follows:

1. Connect the left channel output of the record player to the LEFT PHONO 1 (or PHONO 2) input jack on the rear of the amplifier.
2. Connect the right channel output of the record player to the RIGHT PHONO 1 (or PHONO 2) input jack.
3. If a monophonic player or turntable is used, it may be connected to either LEFT or RIGHT PHONO input jack.

### Listening to a Stereo or Monophonic Record

1. Set the SELECTOR switch to PHONO 1 or PHONO 2 depending on which input is being used.
2. Set the MODE switch to STEREO. If a monophonic record player is used, set the MODE switch to MONO.
3. Make appropriate settings of controls on the record player.
4. Place the needle on the record.
5. Adjust the BALANCE control for equal sound from both right and left speakers.
6. Use all other controls and switches according to your personal taste and room acoustics.

**Note:** When monophonic records are played on a stereo player, follow the same procedures as for stereophonic records for better results.

Insert the power-cord plug of the player into the A.C. outlet marked SWITCHED on the rear of the amplifier. The power supply will then be controlled by the POWER switch on the front panel of the amplifier.

## MICROPHONES

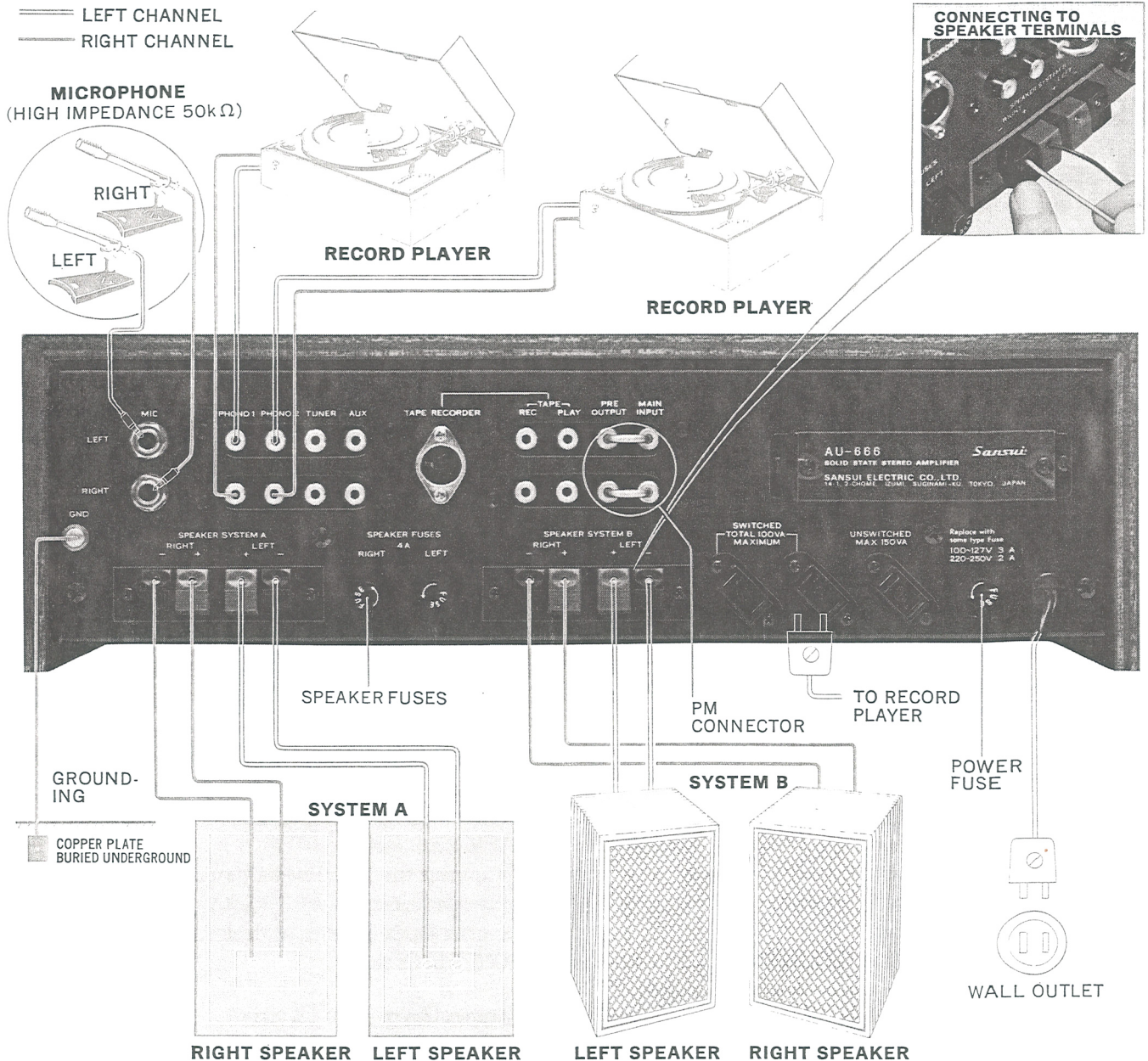
One or two microphones can be connected to the MIC inputs on the rear of the amplifier. Use high-impedance 50-k $\Omega$  dynamic or velocity microphones for optimum performance.

### Connections

If two microphones are used, connect one to the RIGHT MIC input and the other to the LEFT. If only one microphone is used, connect it to either RIGHT or LEFT MIC input.

— LEFT CHANNEL  
— RIGHT CHANNEL

**MICROPHONE**  
(HIGH IMPEDANCE 50k $\Omega$ )



## Operation

1. Turn the SELECTOR switch to MIC.
2. If two microphones are used, set the MODE switch to STEREO or MONO for mixing the two input signals. If only one microphone is used, set the MODE switch to MONO.
3. Use all other controls and switches according to taste and listening conditions.

## TUNERS

### Connecting Tuners

For a stereo tuner, connect its left channel output to the left channel TUNER (or AUX) input jack, and its right channel output to the right channel TUNER (or AUX) input jack. For a monophonic tuner, connect its output to either left or right jack. For use with an FM-MPX adaptor, connect the tuner output to the adaptor input; then connect the left channel output of the adaptor to the left channel TUNER (or AUX) jack, and the right channel output of the adaptor to the right channel TUNER (or AUX) jack.

### Listening to a Stereo FM Program

1. Set the SELECTOR switch to TUNER or AUX depending on whether a stereo tuner has been connected to the TUNER or the AUX inputs on the rear of the amplifier.
2. Set the MODE switch to STEREO.
3. Use tuning controls to reach the desired station. Make appropriate settings of controls on the tuner.
4. Adjust the amplifier's front panel controls and switches according to your personal taste and room acoustics.

### Listening to a Monophonic Program

1. Set the SELECTOR switch to TUNER or AUX depending on whether a tuner has been connected to the TUNER or the AUX inputs on the rear of the amplifier.
2. Set the MODE switch to MONO.
3. Use tuning controls to reach the desired station. Make appropriate settings of controls on the tuner.
4. Adjust the amplifier's front panel controls and switches according to your personal taste and room acoustics.

### For Use with a FM-MPX Adaptor

1. Set the SELECTOR switch to TUNER or AUX depending on whether a FM-MPX adaptor has been connected to the TUNER or the AUX inputs on the rear of the amplifier.
2. Set the MODE switch to STEREO.
3. Use tuning controls to reach the desired station.
4. Make appropriate settings of controls on the FM-MPX adaptor.

5. Adjust the amplifier's front panel controls and switches according to your personal taste and room acoustics.

## TAPE DECKS

### Connecting Tape Decks

Tape decks can be connected to record from, and playback through, the AU-666. Tape monitoring is possible with a tape deck having a built-in pre-amplifier as well as separate recording and playback heads.

### DIN Plug Tape Deck

If your tape deck has a DIN (German Industrial Standard) 5-pin plug, plug it into the TAPE RECORDER socket on the rear panel of the amplifier.

### Pin Jack Tape Deck

To record on tapes from the amplifier:

1. Connect the left channel input of the tape deck to the left channel TAPE REC jack on the rear of the amplifier.
2. Connect the right channel input of the tape deck to the right channel TAPE REC jack.
3. If a monophonic tape deck is used, it may be connected to either LEFT or RIGHT TAPE REC jack.

To playback through the amplifier:

1. Connect the left channel output of the tape deck to the left channel TAPE PLAY jack on the rear of the amplifier.
2. Connect the right channel output of the tape deck to the right channel TAPE PLAY jack.
3. If a monophonic tape deck is used, it may be connected to either left or right TAPE MON jack.

To monitor tapes through the amplifier:

1. Connect the left channel input of the tape deck to the left channel TAPE REC jack and the right channel input of the tape deck to the right channel TAPE REC jack.
2. Connect the left channel output of the tape deck to the left channel TAPE PLAY jack and the right channel output of the tape deck to the right channel TAPE PLAY jack.

### Recording on Tapes

1. Set the SELECTOR switch to the program to



be recorded.

2. Set the MODE switch to STEREO. If a monophonic tape deck is used, set the switch to MONO.
3. Make appropriate settings of controls on the tape deck.

## Listening to Tapes

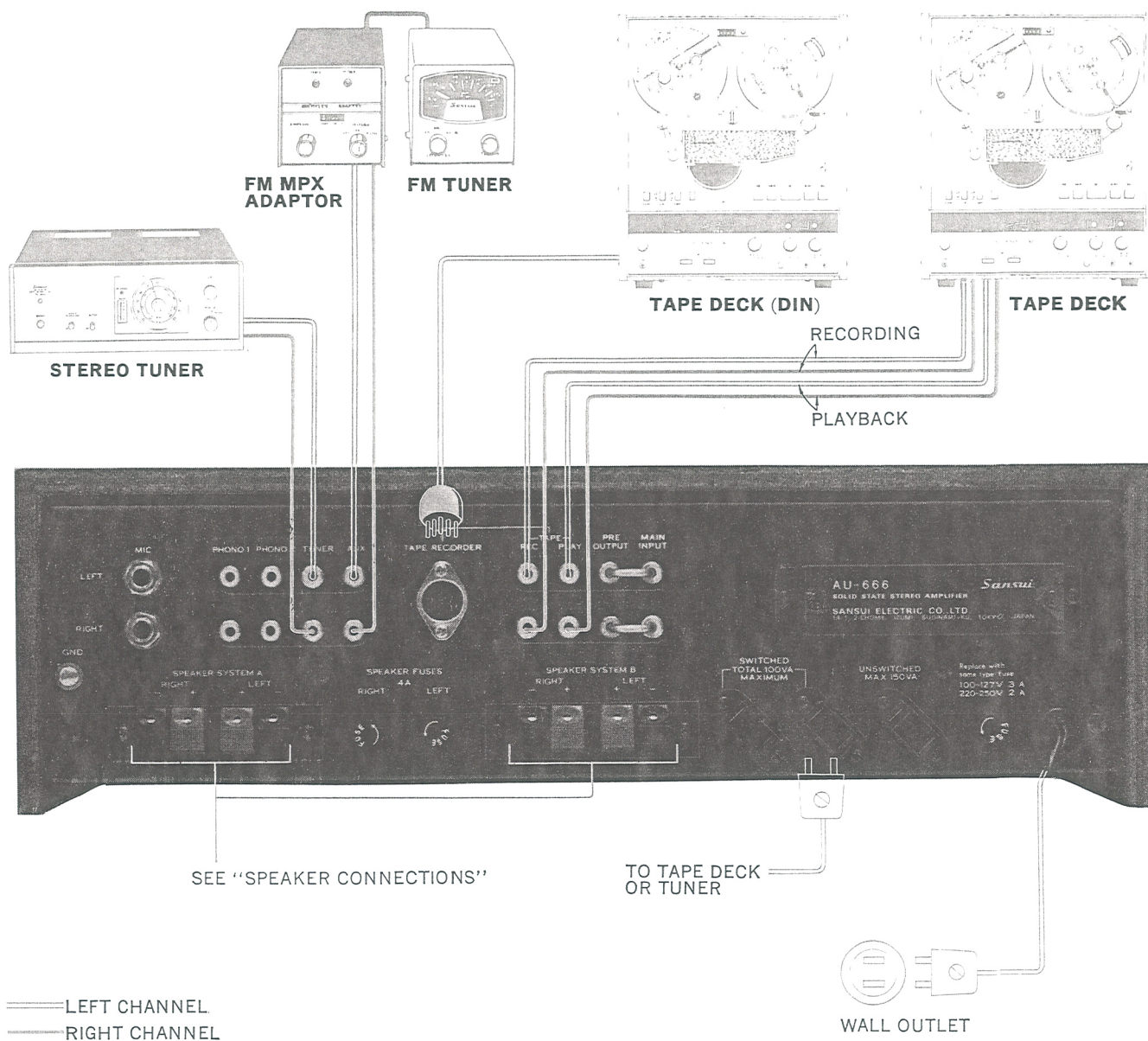
1. Turn the TAPE MONITOR switch to PLAY BACK.
2. Set the MODE switch to STEREO. If a monophonic tape deck is used, set the switch to MONO.
3. Make appropriate settings of controls on the tape

deck.

4. Use the amplifier's front panel controls and switches according to your personal taste and listening conditions.

## Tape Monitoring

Monitoring is possible only with a tape deck which has its own playback preamplifier as well as separate recording and playback heads. Set the TAPE MONITOR switch to PLAY BACK and use all other controls and switches according to your personal taste and listening conditions.



# ELECTRONIC CROSSOVER SYSTEM

---

## Electronic Crossover System

The electronic crossover system is said to be the best hi-fi sound reproduction method available, featuring the following advantages:

1. Since the tweeters, midranges and woofers have their own amplifier, any speakers of different impedance and efficiency can be used for stereo arrangement.
2. This system has better filter characteristics than the conventional LC crossover network. You can determine the optimum crossover points for the speakers used.
3. Since there is no component between the amplifier and speaker, the damping factor of the amplifier is not affected and it is directly coupled to the speaker.
4. This system allows use of the power amplifiers effectively and efficiently. For instance, a big-power amplifier can be used for woofers, and ones with good characteristics for midranges and tweeters. You can select the amplifiers suitable for each of the woofers, midranges and tweeters.

## Connection

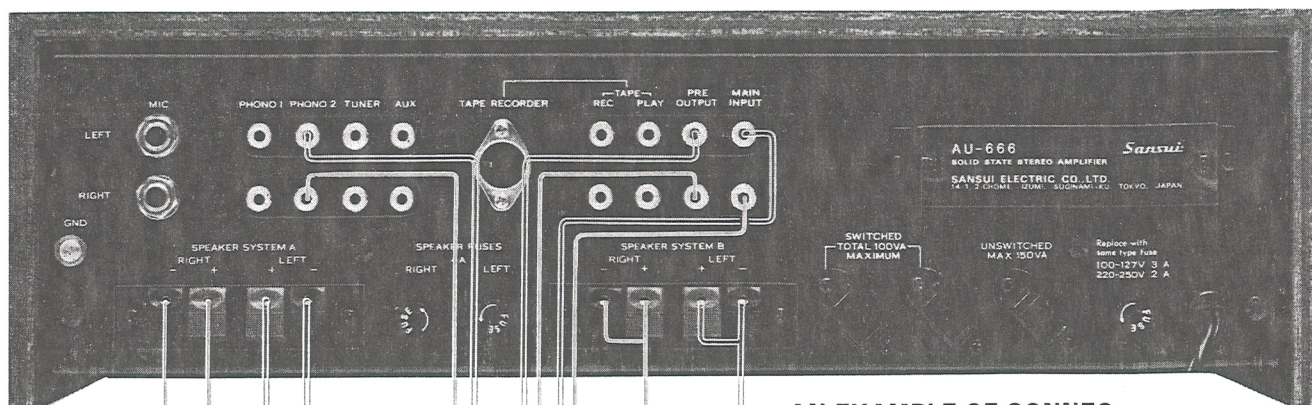
The AU-666's preamp and main amplifier sections can be used separately by simply removing a pair of connectors from the PRE OUTPUT and MAIN INPUT jacks on the rear panel. This feature enables you to use the AU-666 as two separate components of the Electronic Crossover System in the following manner:

1. Set the SPEAKERS switch to SYSTEM B.
2. Turn the POWER switch off and then remove the two connectors from the PRE OUTPUT and MAIN INPUT jacks.
3. Connect an electronic crossover unit (Sansui CD-5) to the PRE OUTPUT jacks.
4. Connect the low-frequency output of the electronic crossover unit to the MAIN INPUT jacks on the AU-666.
5. Connect the right and left woofers to the SYSTEM B terminals on the AU-666.
6. Connect the mid-frequency output of the electronic crossover unit to the inputs of the second separate power amplifier (Sansui BA-90), and the right and left midrange speakers to the said power amplifier.

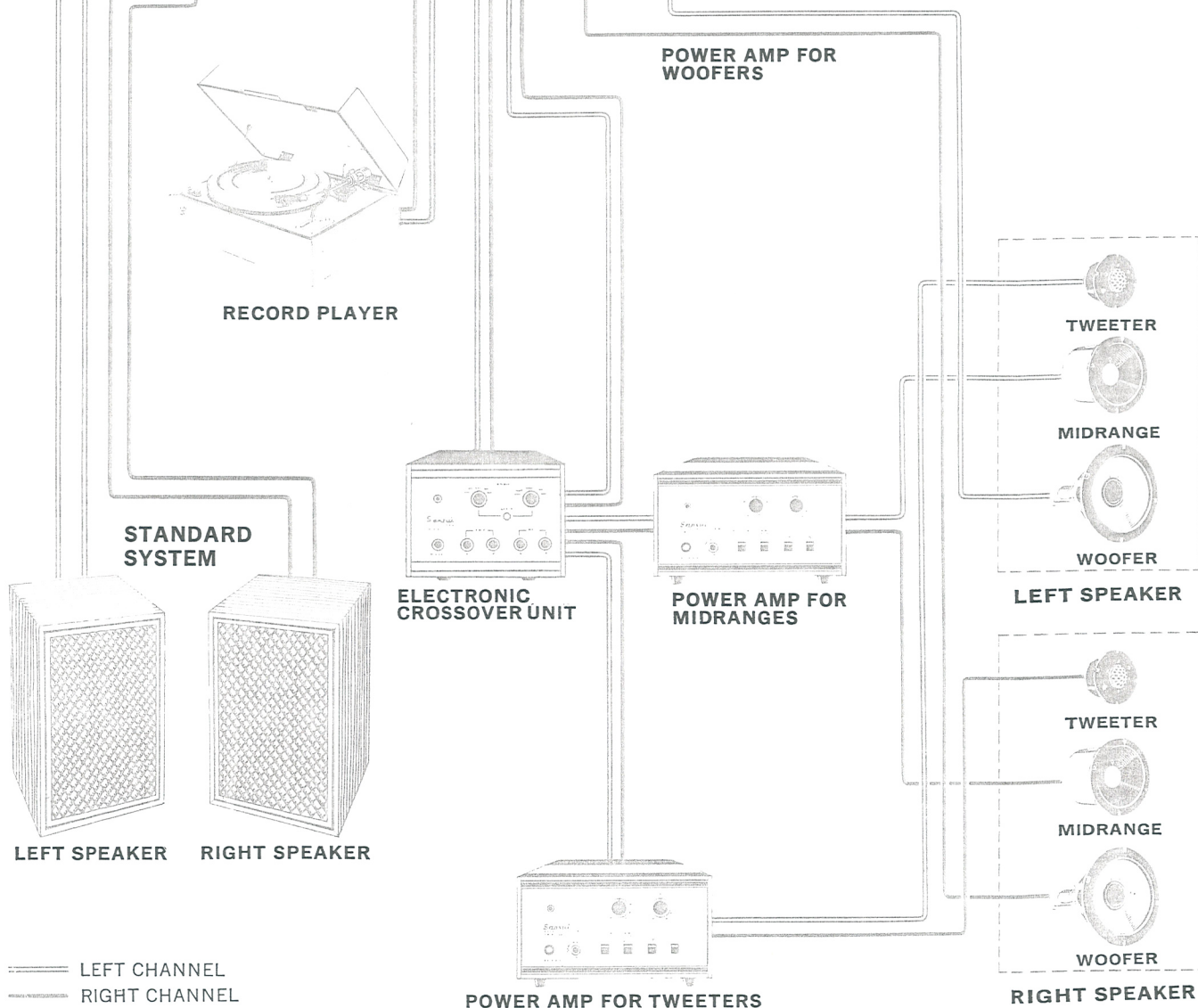
7. Connect the high-frequency output of the electronic crossover unit to the inputs of the third separate power amplifier (Sansui BA-90), and the right and left tweeters to the said power amplifier.

### Notes:

1. You can connect a stereo pair of full-range speakers to the SYSTEM A terminals in addition to the woofers connected to the SYSTEM B and directly compare the sound of the Electronic Crossover System with that of the ordinary stereo arrangement by turning the SPEAKERS switch between the SYSTEM A and B positions.
2. The connection of an additional pre-amplifier to the MAIN INPUT jacks cuts off all front panel switches and controls except the SPEAKERS switch. Thus, to adjust the tone and volume, operate the controls of the additional pre-amplifier connected to the AU-666. When an additional power amplifier is connected to the PRE OUTPUT jacks, the tone and volume can be adjusted by the controls of the AU-666.



# AN EXAMPLE OF CONNECTIONS FOR ELECTRONIC CROSSOVER SYSTEM



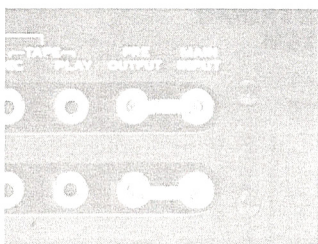


# MAINTENANCE

## PM Connectors

**Warning:** Be sure to turn the *POWER* switch OFF before removing the PM connectors.

The PM connectors hook up the PRE OUTPUT and MAIN INPUT terminals on the rear panel of the amplifier. When the PM connectors are removed with the SPEAKERS switch set in the SYSTEM B or A+B position, the pre-and main amplifier sections can be used individually and separately. They should not be removed except when connecting additional pre and/or main amplifiers. Refer to the section entitled Electronic Crossover System.



## Phasing of Speakers

Stand about 10 feet in front of and midway between the speakers and listen to any monophonic reproduction. If the speakers are correctly phased, the sound will seem to come from between the speakers. If the sound is not directly in front of you, the speakers are incorrectly phased. To correct this, switch the amplifier off and reverse the leads to one speaker.

Care should be taken not to connect a single speaker system between the SYSTEM A and B terminals.

## Hum and Howling

If, when using a tape deck or record player, unpleasant humming or howling is heard, it is usually a result of the following.

The record player is placed on or near the speaker box causing sound waves to be transmitted from the speaker to the player (howling). To prevent this, place the record player away from the speaker box or put a thick cushion between the two components.

A low buzzing sound will also be produced if adequately thick shieldwire is not used for connections, or if connections have not been properly made. Be

sure that the shieldwire is properly soldered to the pin-plugs as illustrated in "Connecting Wire", and that the motor and pickup arm or the record player are properly grounded.

## Speaker Impedance

Combined impedance of speakers in each channel should not be less than 4 ohms. Too low impedance may cause damage to the amplifier after use over a long period.

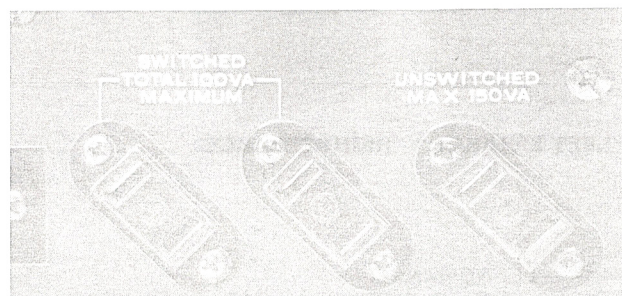
## Tape Deck

1. Tape recorded sound cannot be controlled by the controls and switches on the front panel of the amplifier. They control sound from the speakers only.
2. For better results, record directly through the AU-666, rather than through microphones placed in front of the speakers.
3. Before connecting and operating the tape deck, be sure to look up the manufacturer's operating instructions.
4. The TAPE MONITOR switch should be in the SOURCE position except when the tapes are being monitored or played back by the tape deck. When the switch is in the PLAY BACK position, signals from any other source will not be heard from the speakers.

## A.C. Outlets

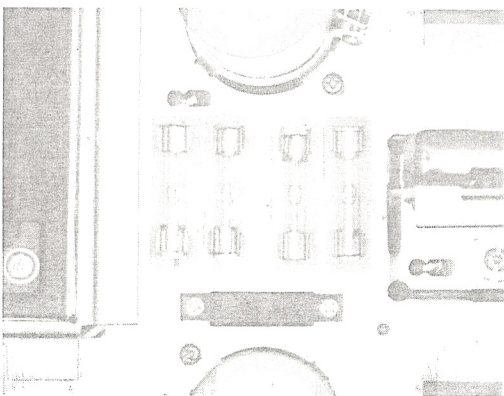
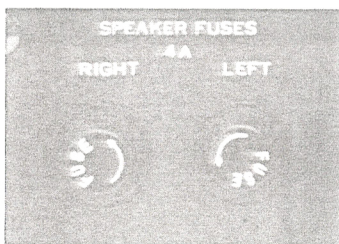
The AU-666 is provided with three A.C. outlets on its rear panel. Two outlets (marked SWITCHED) are switched on and off by the POWER switch on the front panel.

**Caution:** Two outlets marked SWITCHED have a maximum capacity of 100VA total and the other (marked UNSWITCHED) 150VA. Never use them beyond their rated capacities.



## Quick-Acting Fuses

The AU-666 is double protected by the quick-acting fuses at every power transistor stage and in the power circuit. If sound from the speakers is distorted or not heard at all, immediately remove the power plug from its outlet; check for the blown **SPEAKER FUSES** on the rear panel; and, if necessary, replace them with the new 4-ampere fuses (supplied). If OK, remove the bonnet from the AU-666; check the inside fuses; and, if necessary, replace them with the new 3.5-ampere fuses. Before replacing, check for the source of trouble that caused the fuses to blow. If the new fuses blow as soon as the **POWER** switch is turned on, check for the defective power circuit. If the trouble source cannot be located, contact the nearest Sansui dealer or Service Center.



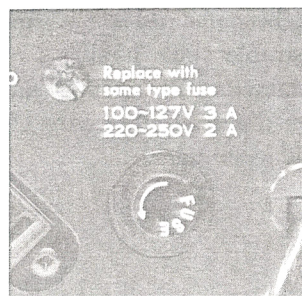
## Power Fuse

**CAUTION:** For the power supply voltage of 100 to 127 volts, use a 3-ampere fuse; for 220 to 250 volts, use a 2-ampere fuse.

If the unit remains completely dead when the power is switched on (**POWER** indicator fails to light), the power fuse is probably blown. In this case, remove the power plug from its AC outlet and replace the fuse after finding and eliminating the trouble that

caused the fuse to blow. (Consult the Troubleshooting Section in your Service Manual)

*Use only a glass-tubed 3(or 2)-ampere fuse. Never attempt to use a piece of wire or a fuse of a different capacity as a substitute.*



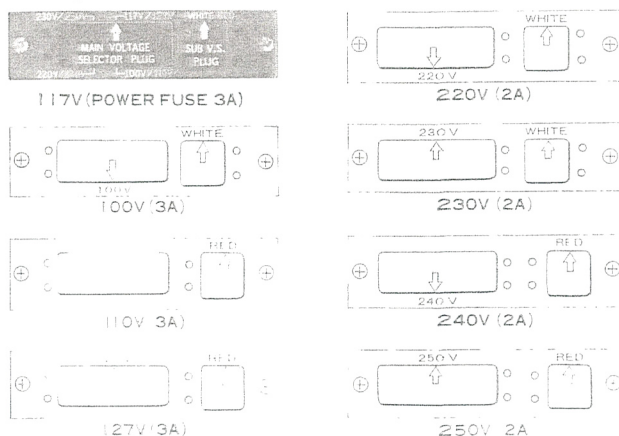
## Voltage Adjustment

To reach the voltage selector, remove the two screws from the nameplate on the rear panel and then remove the nameplate. The voltage selector makes it possible to operate the AU-666 at the correct voltage in any area. The voltage has been pre-adjusted at the factory, but can be easily re-adjusted as follows:

**STEP I** Set arrow of main voltage selector plug to required voltage: 100, 110, 117, 127, 220, 230, 240 or 250 volts.

**STEP II** If numerals of voltage are printed in red, set arrow of adjacent sub V.S. plug to position marked red. If there are printed in white, set arrow to position marked white.

**Note:** The Voltage Adjustor can be also used to eliminate trouble caused by considerable voltage fluctuation. In this case, it should be set to the peak voltage.

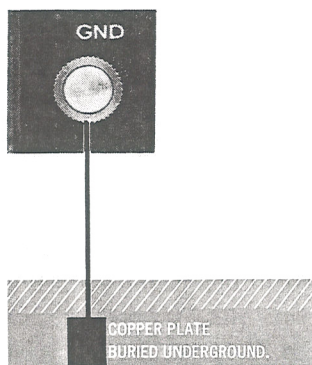




# MAINTENANCE

## Grounding

Connect one end of vinyl or enameled wire to the terminal screw marked GND on the rear of the amplifier, attach a copper plate to the other end, and bury it underground. Whenever an outdoor AM antenna is used, grounding becomes necessary. In all cases, grounding is desirable since it allows a better SN ratio to be obtained. To ground an entire audio system, connect the grounding wire of each component used to this terminal.



## Where to Place

Since transistors are extremely susceptible to heat, the AU-666 has been designed to diffuse heat through the top and rear of its case. Therefore, special consideration should be given to where it will be used before installing the amplifier. It should not be operated in a place where it is exposed directly to the sun, near radiators or other heat-generating sources, and it should never be mounted in an air-tight cabinet. Finally, nothing should be placed on top of it.

## Connecting Wire

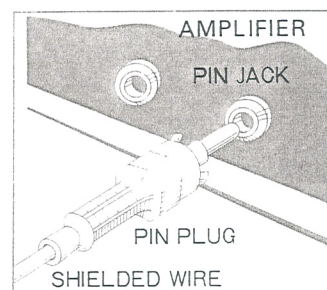
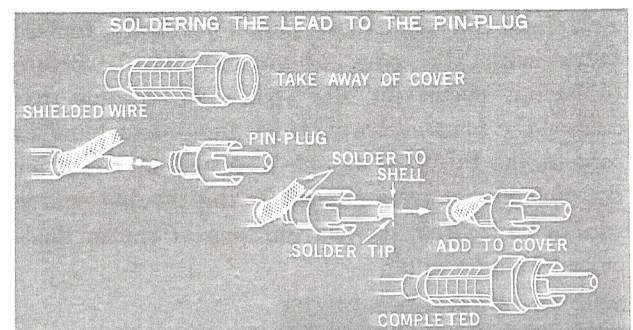
Be sure to use adequately thick shieldwire when connecting a tape deck, record player or other components to the AU-666. The use of an ordinary twin leadwire may cause hum or noise. Don't use shieldwire longer than 7 feet (2 meters). The use of a longer wire leads to greater attenuation at high frequencies.

## Connections

Always check to see that leads are connected firmly and properly to their corresponding output or input terminals. If the connections are loose or in touch

with other parts, the AU-666 will not perform normally, and may produce undesirable noise. If used in such a way for a long time, it will eventually break down. Always read the manufacturer's instructions for tape deck, record player, etc. before connecting.

The shielded wire is made up for use as illustrated below:



# SPECIFICATIONS/ACCESSORIES

## POWER AMPLIFIER SECTION

### POWER OUTPUT:

MUSIC POWER (IHF): 100W at 4 ohms load  
80W at 8 ohms load

### CONTINUOUS POWER:

45/45W at 4 ohms load  
35/35W at 8 ohms load

### TOTAL HARMONIC DISTORTION:

less than 0.5% at rated output

INTERMODULATION DISTORTION: (60Hz: 7,000Hz  
=4:1 SMPTE method) less than 0.5% at rated output

### POWER BANDWIDTH (IHF):

10 to 40,000Hz at 8 ohms load

### FREQUENCY RESPONSE (at normal listening level)

10 to 70,000Hz  $\pm 1$ dB

### CHANNEL SEPARATION (at 1,000Hz rated output)

better than 60dB

HUM AND NOISE (IHF): better than 100dB

INPUT SENSITIVITY: 1V for rated output

INPUT IMPEDANCE: 50k ohms

LOAD IMPEDANCE: 4 to 16 ohms

DAMPING FACTOR: 40 at 8 ohms load

## PRE-AMPLIFIER SECTION

### OUTPUT VOLTAGE

MAXIMUM OUTPUT VOLTAGE:

5V

RATED OUTPUT VOLTAGE:

1V

### TOTAL HARMONIC DISTORTION:

less than 0.1% at rated output voltage

### FREQUENCY RESPONSE:

20 to 40,000Hz  $\pm 1$ dB

### CHANNEL SEPARATION (at 1,000Hz rated output voltage)

PHONO 1 and 2: better than 50dB

TUNER and AUX: better than 50dB

### HUM AND NOISE (IHF):

PHONO-1 and 2: better than 70dB

TUNER and AUX: better than 80dB

### INPUT SENSITIVITY (at 1,000Hz rated output voltage)

PHONO-1 and 2: 2mV (50k ohms)

MIC: 3mV (50k ohms)

TUNER: 180mV (100k ohms)

AUX: 180mV (100k ohms)

TAPE PLAY (pin): 180mV (100k ohms)

TAPE RECORDER (DIN):

180mV (100k ohms)

### RECORDING OUTPUT (at 1,000Hz rated input voltage)

TAPE REC (pin) 180mV

TAPE RECORDER (DIN)

30mV

## EQUALIZER

PHONO:

RIAA NF type

MIC:

Flat NF type

## CONTROLS:

BASS:

+16dB -16dB at 30Hz

MIDRANGE:

+5dB -5dB at 1,500Hz

TREBLE:

+15dB -15dB at 15,000Hz

LOUDNESS:

+8dB at 50Hz,  
+3dB at 10,000Hz  
(volume control at -30dB)

## SWITCHES

LOW FILTER:

-10dB at 20Hz

HIGH FILTER:

-10dB at 20,000Hz

MUTING:

OFF, -20dB

MODE:

STEREO, MONO

TAPE MONITOR:

SOURCE, PLAYBACK

SELECTOR:

MIC, PHONO-2, PHONO-1,  
TUNER, AUX

SPEAKER SELECTOR: SYSTEM-A, SYSTEM-B, SYSTEM-A+B

(Pre- and Power Amp. is separated at SYSTEM-B and SYSTEM-A+B)

## SEMICONDUCTORS:

TRANSISTORS: 31 DIODES: 5

## POWER REQUIREMENTS:

POWER VOLTAGE: 100, 110, 117, 127, 220, 230,  
240, 250V  
50/60Hz

## POWER CONSUMPTION:

240VA (max. signal)

## DIMENSIONS:

16 $\frac{3}{8}$ "(415mm)W, 5"(127mm)H,  
10 $\frac{15}{16}$ "(278mm)D

## WEIGHT:

21.5 lbs.

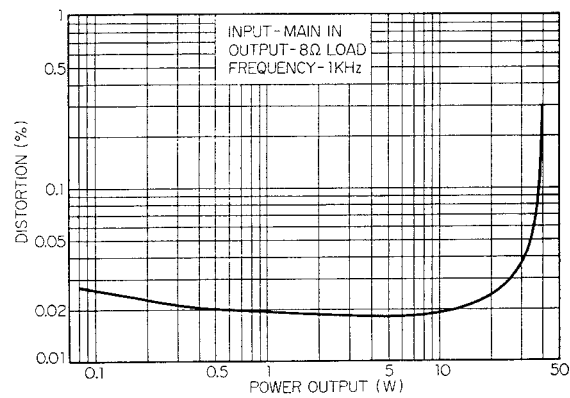
\*Manufacturer reserves right to change design and/or specifications without notice for purpose of improvement.

## ACCESSORIES

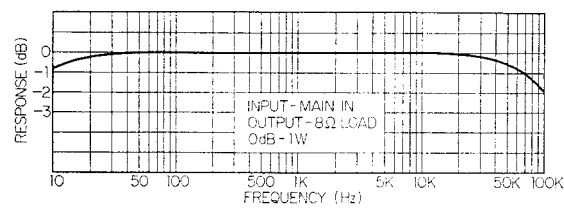
1. OPERATING INSTRUCTIONS AND SERVICE MANUAL..... 1
2. OPERATING SHEET..... 1
3. PIN-PLUGS ..... 4
4. BUTTERFLY BOTS ..... 2
5. WASHERS..... 2
6. POLISHING CLOTH ..... 1
7. QUICK ACTING FUSES (4A) ..... 2
8. MICROPHONE PLUG ..... 2

# CHARACTERISTICS

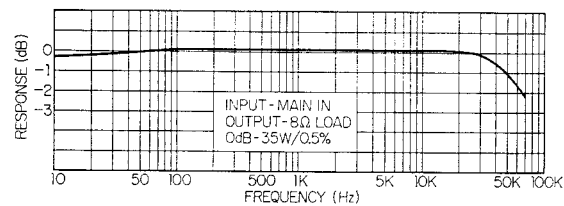
**MUSIC POWER**



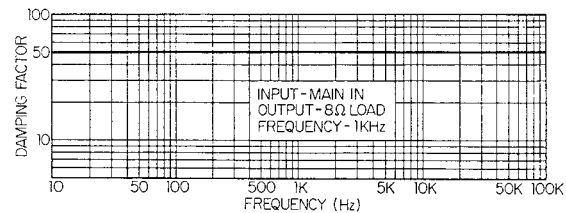
**FREQUENCY RESPONSE**



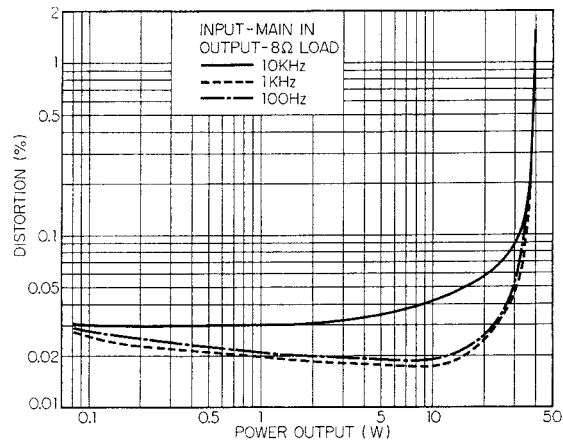
**POWER BANDWIDTH**



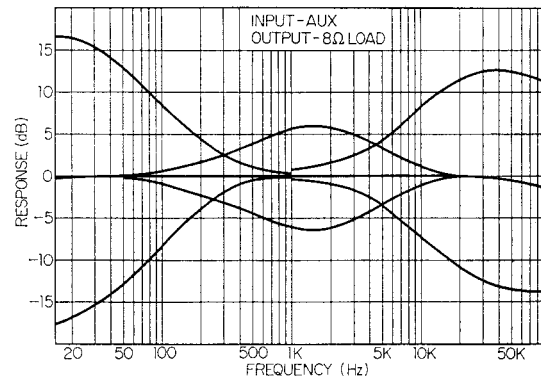
**DAMPING FACTOR**



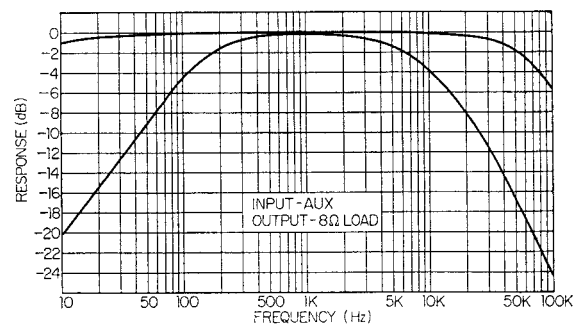
### POWER OUTPUT HARMONIC DISTORTION



### TRIPLE TONE CONTROL



### LOW HIGH FILTER



# TROUBLESHOOTING CHART

If the amplifier is otherwise operating satisfactorily, the more common causes of trouble may generally be attributed to the following:

1. Incorrect connections or loose terminal contacts. Check the speakers, record player, tape deck, antenna and line cord.
2. Improper operation. Before operating any audio components, be sure to read the manufacturer's instructions.

tions.

3. Improper location of audio components. The proper positioning of components, such as speakers and turntable, is vital to stereo.

4. Defective audio components.

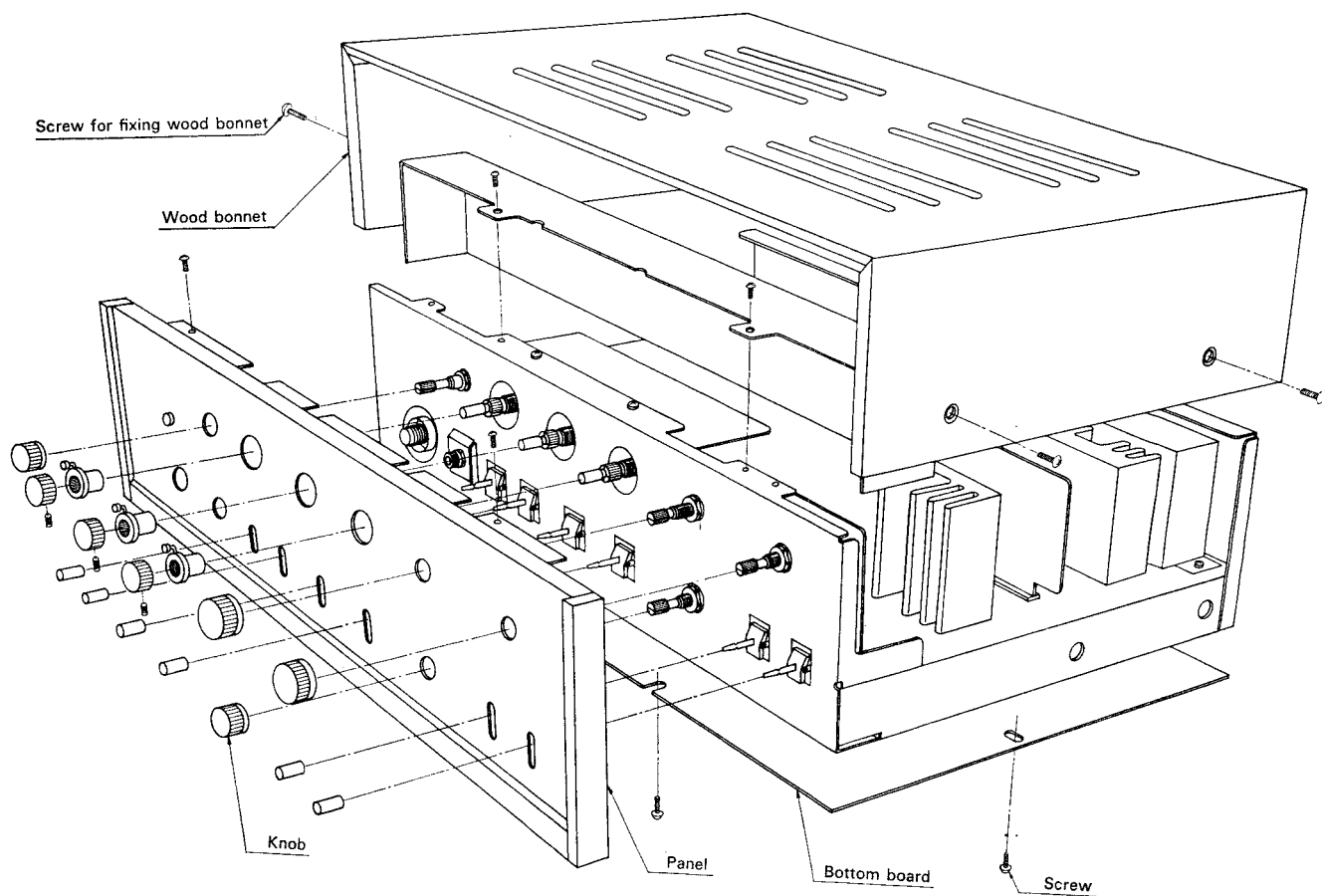
The following are some other common causes of malfunction and what to do about them.

PROGRAM SOURCE	SYMPTOM	PROBABLE CAUSE	WHAT TO DO
Tuner	Constant or intermittent noise heard at certain times or in a certain area	<ul style="list-style-type: none"> <li>* Discharge or oscillation caused by electrical appliances, such as fluorescent lamp, TV set, D.C. motor, rectifier and oscillator</li> <li>* Natural phenomena, such as atmospheric conditions, static, stray and thunderbolts</li> <li>* Insufficient antenna input due to reinforced concrete walls or long distance from the station</li> <li>* Wave interference from other electrical appliances</li> </ul>	<ul style="list-style-type: none"> <li>* Attach a noise limiter to the electrical appliance that causes the noise, or attach it to the power source of the amplifier.</li> <li>* Install an outdoor antenna and ground the amplifier to raise the signal-to-noise ratio.</li> <li>* Reverse the power cord plug-receptacle connections.</li> <li>* If the noise occurs at a certain frequency, attach a wave trap to the ANT. input.</li> <li>* Keep the set at a proper distance from other electrical appliances.</li> </ul>
	Noise heard at a particular time of a day, in a certain area or over part of the dial during AM reception	<ul style="list-style-type: none"> <li>* This results from the nature of AM broadcast</li> </ul>	<ul style="list-style-type: none"> <li>* Install the antenna for maximum antenna efficiency.</li> <li>* In some cases, the noise can be eliminated by grounding the amplifier or reversing the power cord plug-receptacle connections.</li> </ul>
	High-frequency noise during AM reception	<ul style="list-style-type: none"> <li>* Adjacent-channel interference or beat interference</li> <li>* TV set too close to the audio system</li> </ul>	<ul style="list-style-type: none"> <li>* Although such noise cannot be eliminated by the amplifier, it is advisable to set the TREBLE control to the minimum counterclockwise position possible and switch on the HIGH FILTER.</li> <li>* Keep the TV set at a proper distance from the audio system.</li> </ul>
	Noise during FM reception	<ul style="list-style-type: none"> <li>* Poor noise limiter effect or too low S/N ratio due to insufficient antenna input</li> </ul> <p>Note: FM reception is affected considerably by the broadcasting station's power and antenna efficiency. As a result, you may receive one station quite well while having difficulty in receiving another station.</p>	<ul style="list-style-type: none"> <li>* Install the antenna for maximum signal strength.</li> <li>* If this does not prove effective, use an outdoor antenna designed exclusively for FM. When you use a TV antenna for both TV and FM with the help of a divider, make sure the TV reception is not affected.</li> <li>* An excessive long antenna may cause noise.</li> </ul>
	A series of pops	<ul style="list-style-type: none"> <li>* Ignition noise caused by an auto, motorcycle or the like</li> </ul>	<ul style="list-style-type: none"> <li>* Keep the antenna and its lead-in wire away from heavy traveled roads or raise the antenna input.</li> </ul>

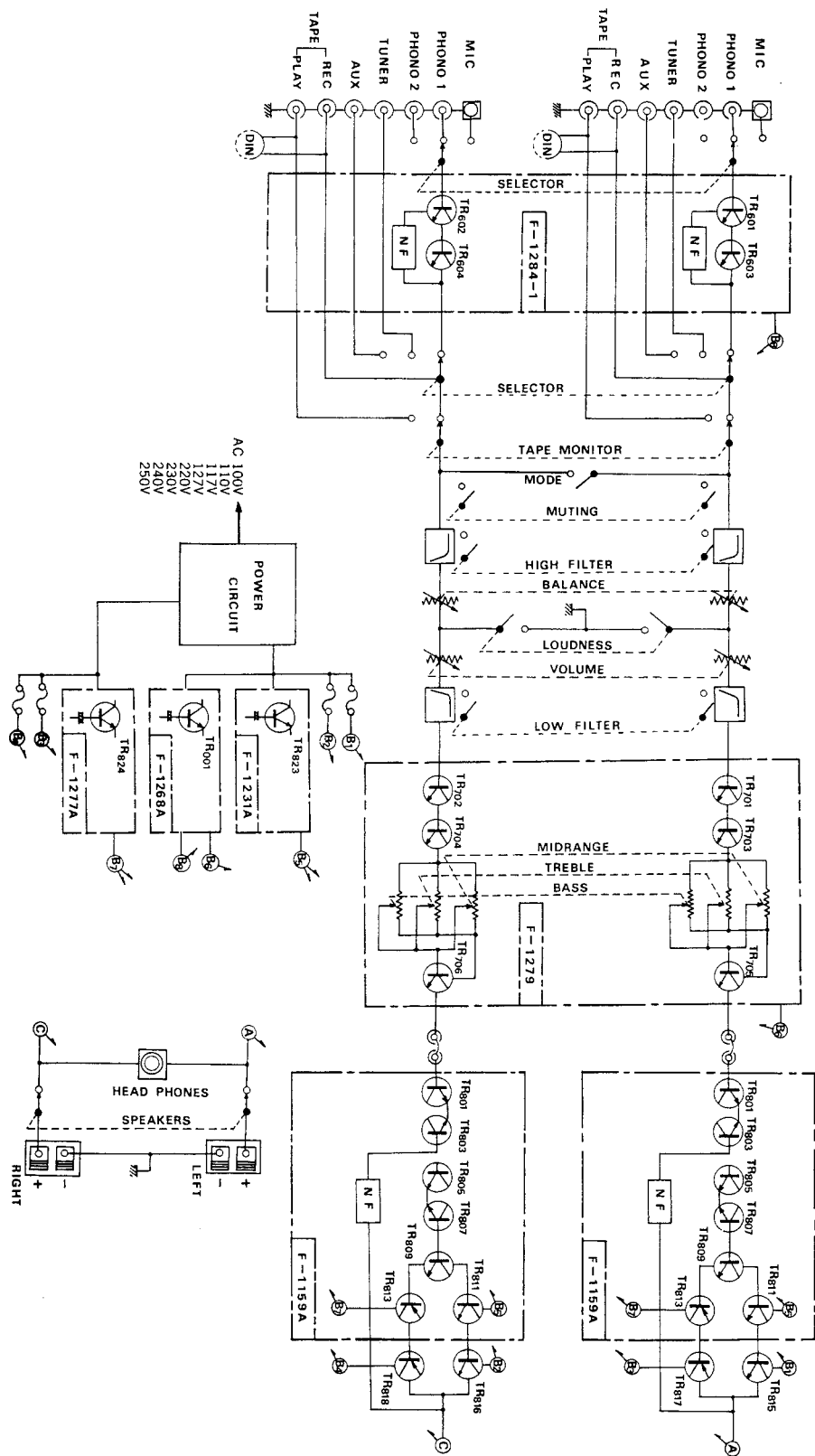
PROGRAM SOURCE	SYMPTOM	PROBABLE CAUSE	WHAT TO DO
(continued)	Noise heard during FM stereo, but not heard during FM mono reception	<ul style="list-style-type: none"> <li>* The service area of the FM stereo broadcast is only half that of the FM mono broadcast</li> </ul>	<ul style="list-style-type: none"> <li>* Install the antenna for maximum antenna input.</li> <li>* Switch on the HIGH FILTER and/or set the TREBLE control to the minimum counterclockwise position possible.</li> </ul>
Record player, tape recorder or tape deck	Hum or howling	<ul style="list-style-type: none"> <li>* Record player placed directly on the speaker box</li> <li>* Use of wire other than shielded wire</li> <li>* Loose terminal contact</li> <li>* Shielded wire too close to the line cord, fluorescent lamp or other electrical appliances</li> <li>* Nearby amateur radio station or TV transmission antenna</li> </ul>	<ul style="list-style-type: none"> <li>* Put a cushion under the record player.</li> <li>* Experiment with several different arrangements before deciding on the final positions of the speaker and record player.</li> <li>* Use a shielded cord for connections.</li> <li>* Switch on the LOW FILTER.</li> <li>* The connecting cord should be as short as possible.</li> <li>* Don't raise the BASS loudness too much.</li> <li>* Consult the nearest Radio Regulatory Bureau.</li> </ul>
	Surface noise	<ul style="list-style-type: none"> <li>* Worn or old record</li> <li>* Worn pick-up needle</li> <li>* Needle covered with dust</li> <li>* Improper needle pressure</li> </ul>	<ul style="list-style-type: none"> <li>* Set the TREBLE control to the minimum counterclockwise position possible and/or switch on the HIGH FILTER.</li> <li>* Clean or replace the needle.</li> </ul>
Common to all program sources	The BALANCE control is not in the mid-position when equal sound comes from both left and right channels.	<ul style="list-style-type: none"> <li>* Due to imperfections in program material, variations in speaker output or asymmetry in room acoustics, the BALANCE control is not always set to the mid-position.</li> </ul>	<ul style="list-style-type: none"> <li>* Set the MODE switches to MONO and adjust the BALANCE control so that the sound is heard from a point midway between the two speakers.</li> </ul>

# DISASSEMBLY PROCEDURE

## REMOVING THE FRONT PANEL, WOOD CASE AND BOTTOM PLATE



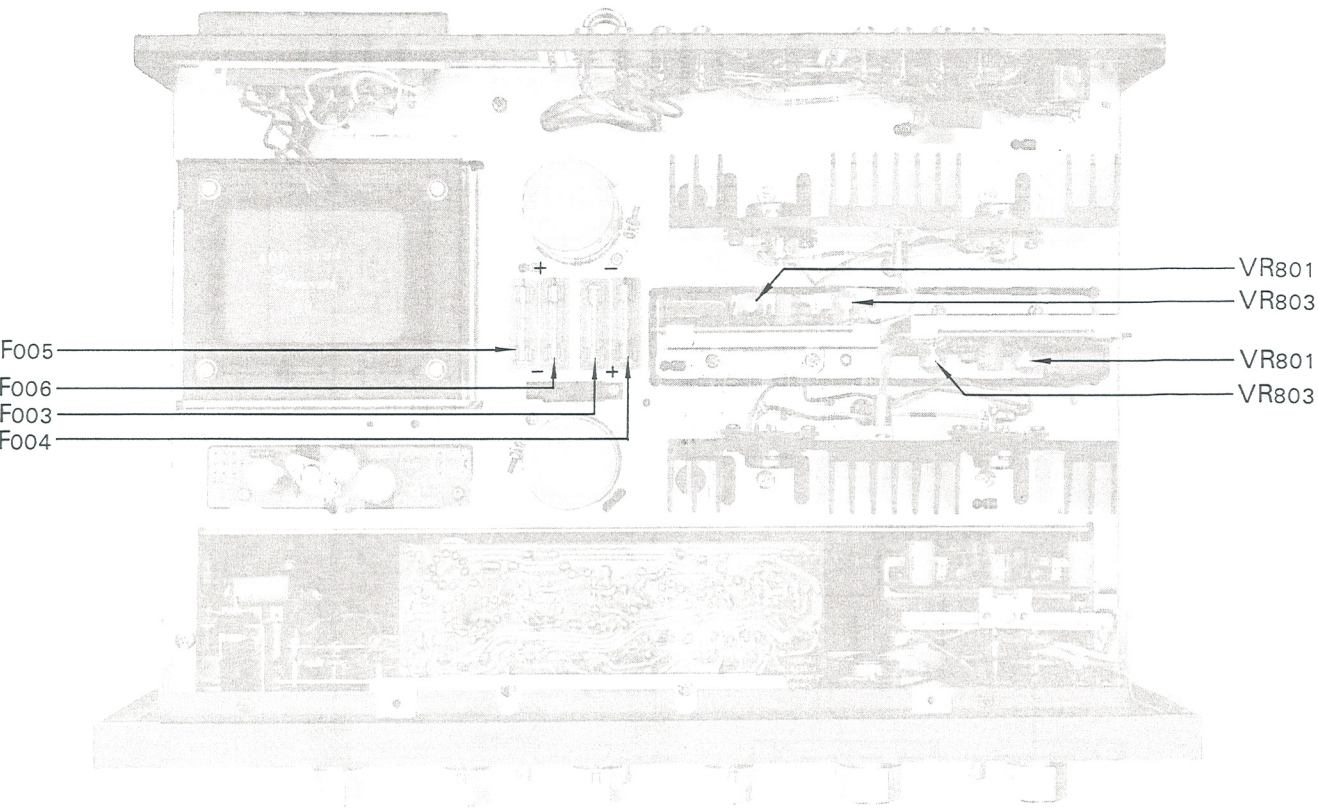
# BLOCK DIAGRAM





# TEST POINTS

---



# ALIGNMENT

## MAIN-AMP. SECTION OUTPUT BALANCE ADJUSTMENT

STEP	WHAT TO DO	REMARKS
1.	Connect an 8 to 16-ohm load resistor to the left-channel SYSTEM A speaker terminal.	The Voltmeter should be used in the 0.5~3V range.
2.	Connect a voltmeter in parallel with the load resistor.	
3.	Turn SPEAKERS switch to SYSTEM A.	
4.	Turn POWER switch on.	
5.	Adjust VR <sub>801</sub> (left channel) so that the voltage will be kept within $0 \pm 50\text{mV}$ .  For the right channel, follow the same procedures as above.	

## MAIN-AMP. SECTION CURRENT ADJUSTMENT

STEP	AMMETER (TESTER)	WHAT TO DO	REMARKS
1.		Remove F <sub>003</sub> and F <sub>004</sub> .	Ammeter required: 100mA or 50mA range
2.		Set VR <sub>803</sub> (left and right channels) to minimum clockwise position.	
3.		Turn POWER switch ON.	
4.	Set to 100mA range.	Set ammeter in place of F <sub>003</sub> . Connect its $\oplus$ terminal to 27, and its $\ominus$ terminal to B <sub>1</sub> in schematic diagram.	Be sure to turn POWER switch on and then connect ammeter.
5.		Turn VR <sub>803</sub> (left channel) and adjust current to 18~22mA.	
6.		Turn POWER switch OFF and reset F <sub>003</sub> to its original position.	
7.	Set to 100mA range.	Turn POWER switch ON and set ammeter in place of F <sub>004</sub> . Connect its $\oplus$ terminal to 27, and its $\ominus$ terminal to B <sub>2</sub> .	
8.		Turn VR <sub>803</sub> (right channel) and adjust current to 18~22mA.	
9.		Turn POWER switch OFF, and attach F <sub>003</sub> and F <sub>004</sub> .	

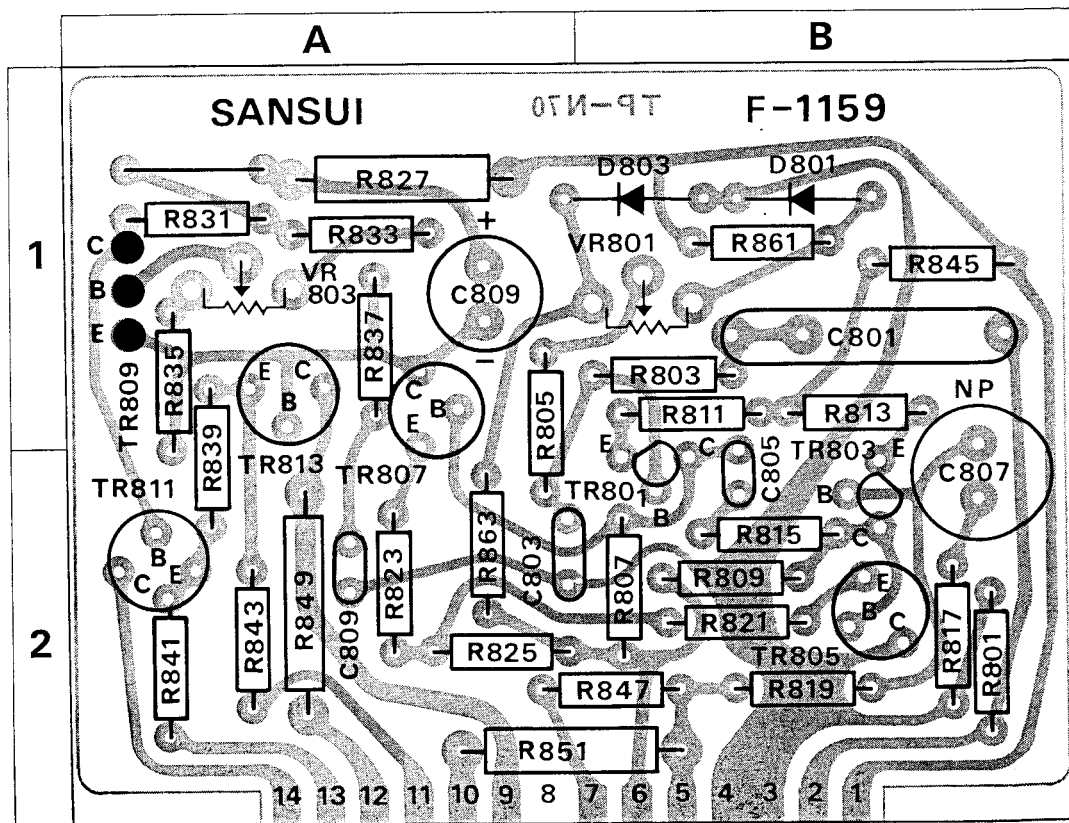
# PRINTED CIRCUIT BOARDS AND PARTS LIST

**X:** Parts No    **Y:** Parts Name    **Z:** Position of Parts

## DRIVER BLOCK <F-1159A>

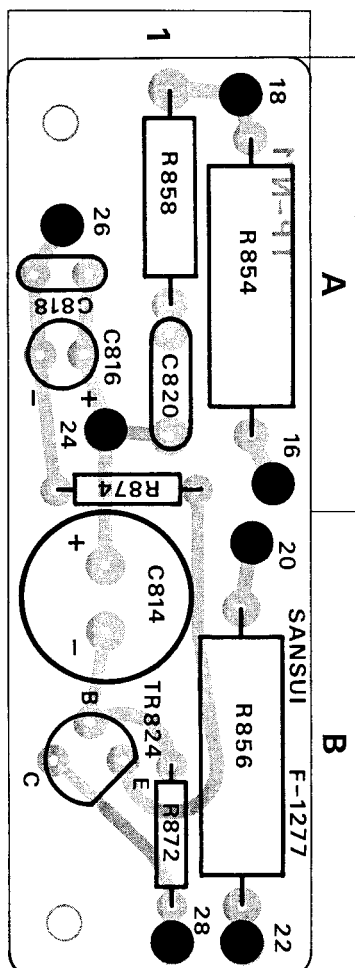
X	Y	Z
R801	470k $\Omega$	2 B
R803	10k $\Omega$	1 B
R805	33k $\Omega$	1, 2 A
R807	5.6k $\Omega$	2 B
R809	5.6k $\Omega$	2 B
R811	120 $\Omega$	1 B
R813	120 $\Omega$	1 B
R815	120 $\Omega$	2 B
R817	1.5k $\Omega$	2 B
R819	33k $\Omega$	2 B
R821	68 $\Omega$	2 B
R823	68 $\Omega$	2 A
R825	560 $\Omega$	2 A
R827	10k $\Omega$	1 A
R831	33 $\Omega$	1 A
R833	3.9k $\Omega$	1 A
R835	1.5k $\Omega$	1 A
R837	120 $\Omega$	1 A
R841	6.8 $\Omega$	2 A
R843	6.8 $\Omega$	2 A
R845	15k $\Omega$	1 B
R861	15k $\Omega$	1 B
R863	15k $\Omega$	2 A

X	Y	Z
VR801	5k $\Omega$ (B) Output Balance Adjustment (103037-2)	1 B
VR803	1k $\Omega$ (B) DC Bias Adjustment (103053)	1 B
C801	1 $\mu$ F $\pm 10\%$ 50 WV Mylar Capacitor	1 A
C803	150pF } $\pm 10\%$ 50 WV Ceramic Capacitor	2 A, B
C805	470 pF }	2 B
C807	47 $\mu$ F 10 WV B.P. Electrolytic Capacitor	2 B
C809	100 $\mu$ F 10 WV Electrolytic Capacitor	1, 2 B
C811	100 pF $\pm 10\%$ 50 WV Ceramic Capacitor	1, 2 A
C823	15 pF $\pm 10\%$ 50 WV Ceramic Capacitor	2 B
TR801	XA495G(C,D) } (030017-2,-3)	1, 2 B
TR803	XA495G(C,D) }	2 B
TR805	8002-1(B,C) } (030555-1,-2)	2 B
TR807	8002-1(B,C) }	1 A
TR809	25C281(C) (030512-2)	1 A
TR811	25C708(A,B,C) (030525,-1,-2)	2 A
TR813	25A537(A,B,C) (030006,-1,-2)	1 A
D801	SM-150-01 } (031028)	1 B
D803	SM-150-01 }	1 B



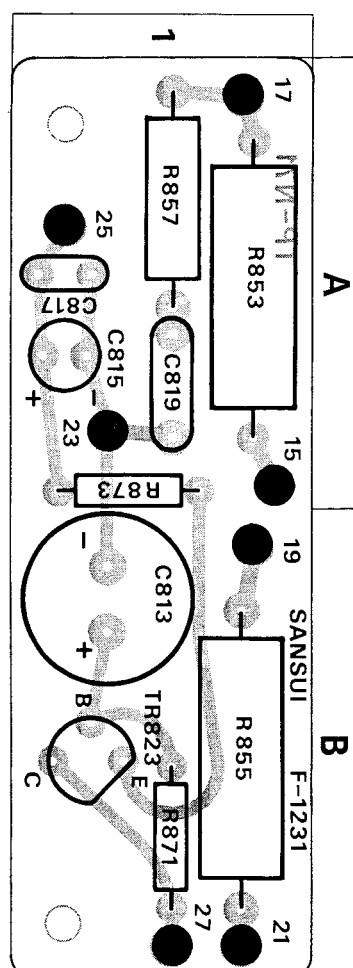
## MINUS RIPPLE FILTER BLOCK 〈F-1277A〉

X	Y	Z
R854	$0.5\Omega$ } $\pm 20\%$ 2 W Cement Resistor	1 A
R856	$0.5\Omega$ } $\pm 20\%$ 2 W Cement Resistor	1 B
R858	$10\Omega$ } $\pm 10\%$ 2 W Metal Film Resistor	1 A
R872	$10k\Omega$ } $\pm 10\%$ $\frac{1}{2}$ W Solid Resistor	1 B
R874	$47\Omega$ } $\pm 10\%$ $\frac{1}{2}$ W Solid Resistor	1 A
C814	$100\mu F$ } 50 WV Electrolytic	1 B
C816	$4.7\mu F$ } 50 WV Capacitor	1 A
C818	$0.01\mu F$ } $\pm 10\%$ 50 WV Ceramic Capacitor	1 A
C820	$0.047\mu F$ } $\pm 10\%$ 50 WV Mylar Capacitor	1 A
TR824	9002-1(B, C) (030014-1,-2)	1 B



## PLUS RIPPLE ELITER BLOCK 〈F-1231A〉

X	Y	Z
R853	$0.5\Omega$ } $\pm 20\%$ 2 W Cement Resistor	1 A
R855	$0.5\Omega$ } $\pm 20\%$ 2 W Cement Resistor	1 B
R857	$10\Omega$ } $\pm 10\%$ 2 W Metal Film Resistor	1 A
R871	$4.7k\Omega$ } $\pm 10\%$ $\frac{1}{2}$ W Solid Resistor	1 B
R873	$47\Omega$ } $\pm 10\%$ $\frac{1}{2}$ W Solid Resistor	1 A
C813	$100\mu F$ } 50 WV Electrolytic	1 B
C815	$4.7\mu F$ } 50 WV Capacitor	1 A
C817	$0.01\mu F$ } $\pm 10\%$ 50 WV Ceramic Capacitor	1 A
C819	$0.047\mu F$ } $\pm 10\%$ 50 WV Mylar Capacitor	1 A
TR823	8002-1(B, C) (030555-1,-2)	1 B



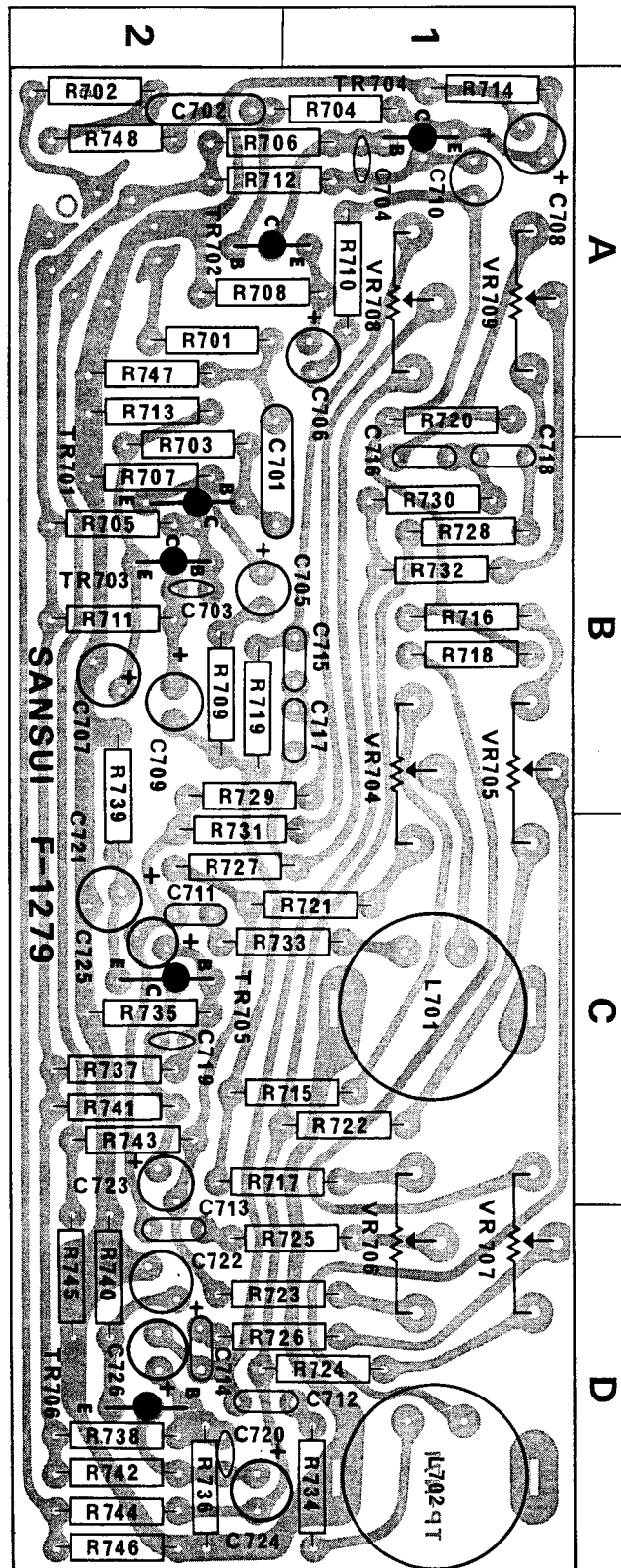
# PRINTED CIRCUIT BOARDS AND PARTS LIST

X: Parts No Y: Parts Name Z: Position of Parts

## tone control block <F-1279>

X	Y	Z
R701	3.3k $\Omega$	2 A
R702	3.3k $\Omega$	2 A
R703	680k $\Omega$	2 B
R704	680k $\Omega$	1, 2 A
R705	68k $\Omega$	2 B
R706	68k $\Omega$	1, 2 A
R707	1.5k $\Omega$	2 B
R708	1.5k $\Omega$	1, 2 A
R709	10k $\Omega$	2 B
R710	10k $\Omega$	1 A
R711	5.6k $\Omega$	2 B
R712	5.6k $\Omega$	1, 2 A
R713	680 $\Omega$	2 A
R714	680 $\Omega$	1 A
R715	5.6k $\Omega$	1, 2 C
R716	5.6k $\Omega$	1 B
R717	1k $\Omega$	1, 2 C
R718	1k $\Omega$	1 B
R719	12k $\Omega$	2 B
R720	12k $\Omega$	1 A
R721	5.6k $\Omega$	1, 2 C
R722	5.6k $\Omega$	1 C
R723	1k $\Omega$	1, 2 D
R724	1k $\Omega$	1, 2 D
R725	3.3k $\Omega$	1, 2 D
R726	3.3k $\Omega$	1, 2 D
R727	12k $\Omega$	1, 2 C
R728	12k $\Omega$	1 B
R729	3.3k $\Omega$	1, 2 B
R730	3.3k $\Omega$	1 B
R731	10k $\Omega$	1, 2 C
R732	10k $\Omega$	1 B
R733	12k $\Omega$	1, 2 C
R734	12k $\Omega$	1 D
R735	33k $\Omega$	2 C
R736	33k $\Omega$	2 D
R737	220k $\Omega$	2 C
R738	220k $\Omega$	2 D
R739	1k $\Omega$	2 B, C
R740	1k $\Omega$	2 D
R741	5.6k $\Omega$	2 C
R742	5.6k $\Omega$	2 D
R743	220 $\Omega$	2 C
R744	220 $\Omega$	2 D
R745	100k $\Omega$	1 D
R746	100k $\Omega$	2 D
R747	120k $\Omega$	2 A
R748	120k $\Omega$	2 A
C701	0.22 $\mu$ F	1, 2 A B
C702	0.22 $\mu$ F	2 A
C703	47 pF	2 B
C704	47 pF	1 A
C705	10 $\mu$ F	1, 2 B
C706	10 $\mu$ F	1 A
C707	47 $\mu$ F	2 B
C708	47 $\mu$ F	1 A

X	Y	Z
C709	10 $\mu$ F	2 B
C710	10 $\mu$ F	1 A
C711	0.008 $\mu$ F	2 C
C712	0.008 $\mu$ F	1, 2 D
C713	0.0022 $\mu$ F	2 D
C714	0.0022 $\mu$ F	2 D
C715	0.022 $\mu$ F	1 B
C716	0.022 $\mu$ F	1 B
C717	0.022 $\mu$ F	1 B
C718	0.022 $\mu$ F	1 B
C719	47 pF	2 C
C720	47 pF	2 D
C721	47 $\mu$ F	2 C
C722	47 $\mu$ F	2 D
C723	10 $\mu$ F	2 D
C724	10 $\mu$ F	1, 2 D
C725	1 $\mu$ F	2 C
C726	1 $\mu$ F	2 D
VR705,706	100k $\Omega$ (B) $\times$ 2 Midrange Control (102007)	B, C
VR707,708	100k $\Omega$ (B) $\times$ 2 Treble Control (102007)	2 C, D
VR709,710	100k $\Omega$ (B) $\times$ 2 Bass Control (102007)	1 A
TR701	2SC871R(E,F)	2 B
TR702	2SC871R(E,F)	1, 2 A
TR703	2SC871R(F)	2 B
TR704	2SC871R(F)	1 A
TR705	2SC871R(E,F)	2 C
TR706	2SC871R(E,F)	2 D
L701	0.8H	1 C
L702	0.8H	1 D

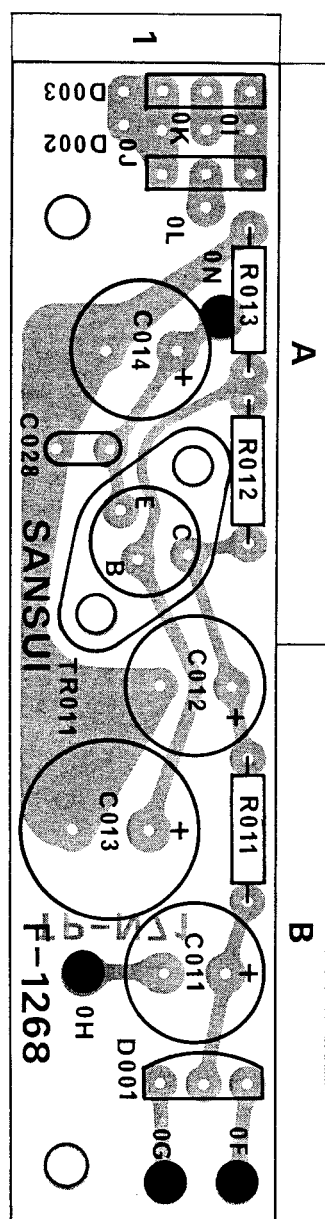


# PRINTED CIRCUIT BOARDS AND PARTS LIST

X: Parts No. Y: Parts Name Z: Position of Parts

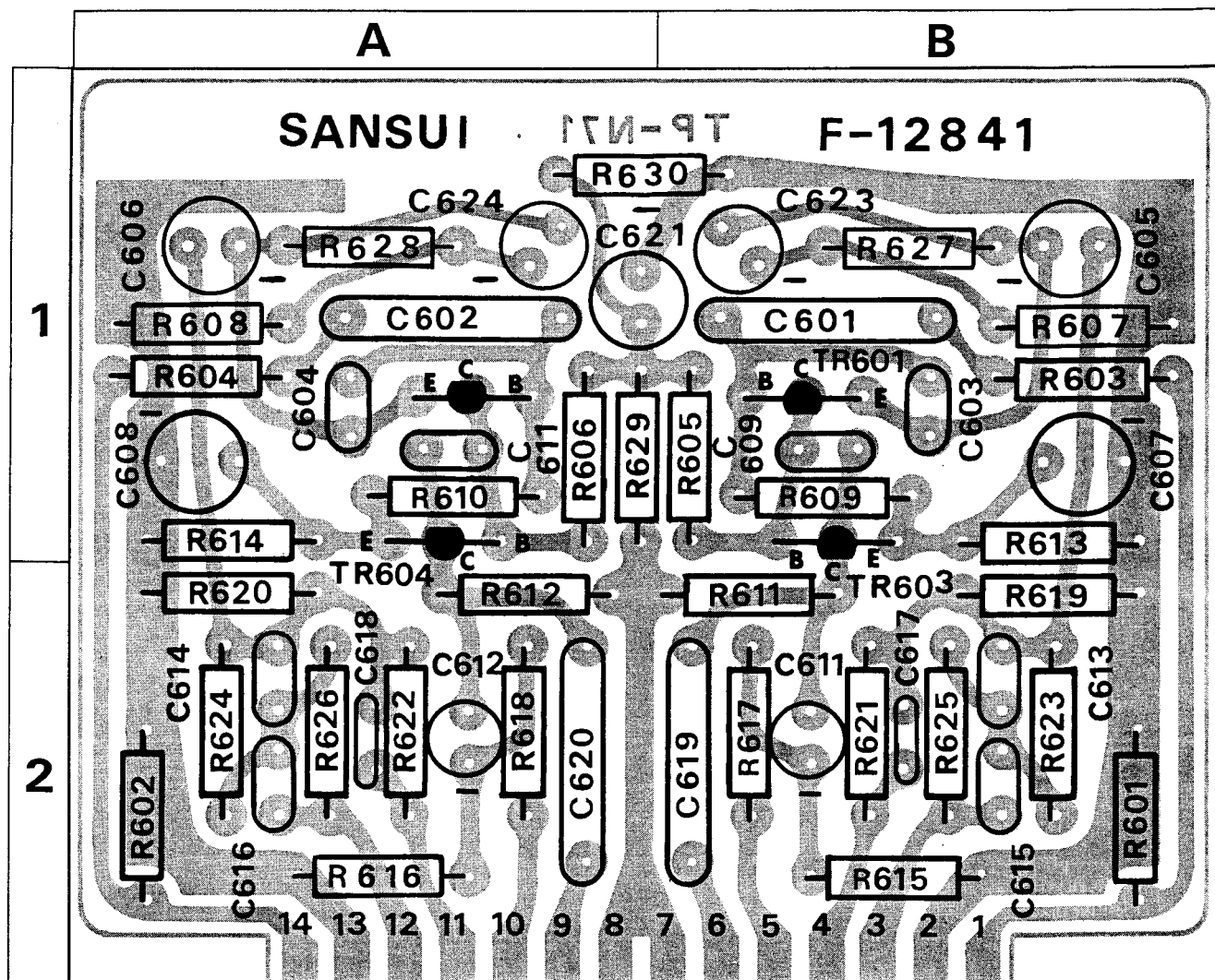
## RIPPLE FILTER BLOCK <F-1268A>

X	Y	Z
R012 R013	8.2k $\Omega$ 33k $\Omega$ } $\pm 10\%$ $\frac{1}{2}$ W Solid Resistor	1 A 1 A
C012 C013 C014	100 $\mu$ F 220 $\mu$ F 100 $\mu$ F } 50 WV Electrolytic Capacitor	1 B 1 B 1 A
C028	0.01 $\mu$ F $\pm 10\%$ 50 WV Ceramic Capacitor	1 A
TR001	2SD223(O, Y, G) (030823,-1,-2)	1 A



## HEAD AMP BLOCK <F-1284-I>

X	Y	Z
R601 R602 R603 R604 R605 R606 R607 R608 R609 R610 R611 R612 R613 R614 R615 R616 R617 R618 R619 R620 R621 R622 R623 R624 R625 R626 R627 R628 R629 R630	68k $\Omega$ 68k $\Omega$ 2.7k $\Omega$ 2.7k $\Omega$ 68k $\Omega$ 68k $\Omega$ 470 $\Omega$ 470 $\Omega$ 680k $\Omega$ 680k $\Omega$ 15k $\Omega$ 15k $\Omega$ 1k $\Omega$ 1k $\Omega$ 68k $\Omega$ 68k $\Omega$ 680 $\Omega$ 680 $\Omega$ 15k $\Omega$ 15k $\Omega$ 27k $\Omega$ 27k $\Omega$ 560k $\Omega$ 560k $\Omega$ 33k $\Omega$ 33k $\Omega$ 2.2k $\Omega$ 2.2k $\Omega$ 33k $\Omega$ 15k $\Omega$ } $\pm 10\%$ $\frac{1}{4}$ W Carbon Resistor	2 B 2 A 1 B 1 A 1 B 1 A 1 B 1 A 1 B 1 A 2 B 2 A 2 A 1 B 1 A 2 B 2 A 2 B 2 A 2 A 2 A 2 B 2 A 2 A 2 A 2 A 2 A 2 A 1 B
C601 C602 C603 C604 C605 C606 C607 C608 C609 C610 C611 C612 C613 C614 C615 C616 C617 C618 C619 C620 C621 C623 C624	0.47 $\mu$ F 0.47 $\mu$ F 47 pF 47 pF 47 $\mu$ F 47 $\mu$ F 100 $\mu$ F 100 $\mu$ F 47 pF 47 pF 10 $\mu$ F 10 $\mu$ F 0.0068 $\mu$ F 0.0068 $\mu$ F 0.0022 $\mu$ F 0.0022 $\mu$ F 100 pF 100 pF 0.47 $\mu$ F 0.47 $\mu$ F 33 $\mu$ F 33 $\mu$ F 33 $\mu$ F 33 $\mu$ F } $\pm 10\%$ 50 WV Mylar Capacitor  50 WV Ceramic Capacitor  6.3 WV Electrolytic Capacitor  50 WV Ceramic Capacitor 25 WV Electrolytic Capacitor  $\pm 10\%$ 50 WV Mylar Capacitor  $\pm 10\%$ 50 WV Ceramic Capacitor  $\pm 10\%$ 50 WV Mylar Capacitor 16 WV Electrolytic Capacitor  $\pm 10\%$ 6.3WV Electrolytic Capacitor	1 B 1 A 1 B 1 A 1 B 1 A 1 B 1 A 1 B 1 A 1 A, 2 B 2 A 2 B 2 A 2 A 2 A 2 B 2 A 2 B 2 A 2 A 1 A, B 1 B 1 A
TR601 TR602 TR603 TR604	2SC871R(E,F) 2SC871R(E,F) 2SC871R(F) 2SC871R(F) } (030547-4,-5)  (030547-5)	1 B 1 A 1 B 1 A





# OTHER PARTS AND THEIR POSITION ON CHASSIS

X: Parts No Y: Parts Name

X	Y	
R014	1k $\Omega$	
R631	470k $\Omega$	
R632	470k $\Omega$	
R633	180k $\Omega$	
R634	180k $\Omega$	
R635	100k $\Omega$	
R636	100k $\Omega$	
R747	10k $\Omega$	
R748	10k $\Omega$	$\pm 10\%$ $\frac{1}{4}$ W Carbon Resistor
R749	820k $\Omega$	
R750	820k $\Omega$	
R751	470k $\Omega$	
R752	470k $\Omega$	
R753	27k $\Omega$	
R754	27k $\Omega$	
R755	820k $\Omega$	
R756	820k $\Omega$	
R859	470 $\Omega$	
R866	470 $\Omega$	$\pm 10\%$ 2 W Metal Film Resistor
VR701,702	250k $\Omega$ (MN) Balance Adjustment	(101050)
VR703,704	250k $\Omega$ (B) $\times 2$ Volume	(101002-1)
C001	0.033 $\mu$ F	600VV Oil Capacitor
C002	3300 $\mu$ F	50 WV Electrolytic Capacitor (020521)
C003	3300 $\mu$ F	
C029	100 $\mu$ F	
C630	0.05 $\mu$ F	$\pm 10\%$ 25 WV Ceramic Capacitor
C631	0.05 $\mu$ F	
C727	150 pF	$\pm 10\%$ 50 WV Mica Capacitor
C728	150 pF	
C729	0.01 $\mu$ F	$\pm 10\%$ 50 WV Mylar Capacitor
C730	0.01 $\mu$ F	
C731	0.01 $\mu$ F	
C732	0.01 $\mu$ F	
C733	0.0022 $\mu$ F	
C734	0.0022 $\mu$ F	
TR815	2SD188 (L,M,N)	(030830,-1,-2)
TR816	2SD188 (L,M,N)	
TR817	2SA627 (L,M,N)	(030023,-1,-2)
TR818	2SA627 (L,M,N)	
D001	5B2	(031066)
NF-C	0.05 $\mu$ F $\times 4$	(080012)
PL001	6.3V 250mA Pilot Lamp	(040009)
T001	Power Transformer 400-5392	(400070)
F001, 002	4A Quick Acting Fuse	(043039-1)
F003 $\sim$ 006	3.5A Quick Acting Fuse	(043034)
F007	3A FUSE (100 $\sim$ 127V)	(043004-1)
	2A FUSE (220 $\sim$ 250V)	(043003-1)
CO001 $\sim$ 003	AC Outlet	(245001)
PU001	Voltage Selector Socket	(241017)
PU002	Voltage Selector Plug	(241018)
		(241019)
PU601	5P Connector DIN	(243004)

X	Y	
J601, 602	2P 64M Jack	(243008-1)
J801	Headphone Jack	(243007-1)
S1(a $\sim$ f)	Selector Switch Y-3-6-5	(110329,-1)
S2(a, b)	Tape Monitor Switch	(117017)
S3	Mode Switch	(117017)
S4(a, b)	Muting Switch	(117017)
S5(a, b)	High Filter Switch	(117017)
S6(a, b)	Loudness Switch	(117017)
S7(a, b)	Low Filter Switch	(117017)
S8(a $\sim$ f)	Speaker Switch Y-2-4-4	(110219,-1)
S9	Power Switch	(113016)

